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**AUSTRALIAN NATIVE BIRDS:  
IS EXPORT PROHIBITION THE BEST POLICY ?**



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## *Introduction*

Thus far in our history, development in Australia has fallen far short of being sustaining to Australian birdlife. Local extinctions of scores of bird species have resulted from agricultural and residential development. Our main land use, clearing followed by agriculture, forestry or housing, has involved destruction or modification of existing ecosystems to the detriment of several native bird species<sup>1</sup>. Some introduced animal (especially cats) and bird species compete with native bird species, thereby reducing native populations. Since European settlement of Australia, 10 species of birds have become extinct (Ley, 1992).

However, not all development in Australia has jeopardized the numbers and diversity of native bird species. Some government policies and actions have assisted the survival of native species. Such examples are:

- provision of national parks and nature reserves,
- control of competing introduced species (eg feral cats),
- prohibition on import of species likely to deleteriously affect our wildlife,
- restoration of species' habitats and reforestation with indigenous trees and shrubs,
- greater educational commitment to promote interest in care for the environment, including care of its native bird species,
- scientific study and monitoring of native species.
- payments to land-holders to care for a species (eg Cape Barron geese in Tasmania).
- restrictions on capture and control of native birds.

Of all such policies and actions pursued by government, I want to examine the case of export prohibition of native birds.

## *Current Legislation and Administration*

The export of Australian native wildlife is currently strictly controlled by the Australian National Parks and Wildlife Service which administers the Wildlife Protection (Regulation of Exports and Imports) Act 1982.

Under this Act, the export of native birds is effectively prohibited. The exceptions are interchanges between zoos, the export of household pets and exports for scientific purposes. Only 6 species are allowed to be exported as household pets. The maximum number of birds a family may export as household pets of each of these species is two and a family may export a maximum of 6 birds altogether. Also, except in the case of budgerigars, the family must have been a resident in Australia for at least four years preceding the export of the birds and there must be proof of ownership of the birds for at least the last three years.

To export birds for scientific purposes requires that the receiving institution be listed on the prescribed class of scientific organisations. A précis of the proposed research is required together with an endorsement from the head of the research organisation. Photographs and plans of the facilities where the birds will be kept are required and the organisation must show that its personnel and facilities are able to care for the birds.

Although the current Wildlife Protection (Regulation of Exports and Imports) Act was passed in 1982 and some amendments to the Act were passed in 1991, preceding legislation has effectively banned the export of native birds since 1960. At the time of writing, a review of the 1982 Act and 1991 Amendments has not resulted in any relaxation of the export ban. Current legislation and regulation means that import into Australia of many species of captive bred birds is permitted but effectively no captive bred Australian birds may be exported.

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<sup>1</sup> However, some species have greatly benefited from agriculture by having year-round access to water-supplies and greater availability of suitable feeds.

Although the recent review of the Act (Ley, 1992) recommended no interim change in export regulation, it did recommend that consideration be given to "examining the practical aspects of establishing a fully funded administrative control mechanism to allow strictly regulated commercial exports of a limited number of species of captive bred native birds which are not endangered or threatened," (p.xxx). In making such a recommendation the report acknowledges that there may be a case for a highly regulated export of some native bird species.

Maintaining and policing the current legislative ban on exports of native birds requires the involvement of many state and national authorities. The list includes the Australian Customs Service, the Australian National Parks and Wildlife Service, the Australian Federal Police, the Australian Bureau of Criminal Intelligence, the Australian Quarantine and Inspection Service, Australia Post and several state/territory wildlife agencies and police services. Defining and maintaining the cooperative roles and precise jurisdictions of all these bodies relevant to the policing of the export ban is a costly and difficult task, as acknowledged in the legislative review. Such co-operation is, however, necessary to reduce illegal trade in birds. The rapid increase in the last three years of the number of seizures and surrenders under the 1982 Act (e.g. 3069 cases in 1990-1 versus 881 cases in 1988-9) has been due to improved co-operation and more enforcement resources; combined with travellers' general ignorance about what products cannot be legally imported into or exported from Australia.

The current administration of the 1982 and related Acts allows, for example, the import of captive bred green, red and blue and gold Macaws. Their progeny can sell in Australia or be exported, with each breeding pair selling for over \$30,000 (Anon, 1992). However, captive bred Australian birds, some of which also fetch prices greater than \$10,000 a breeding pair, cannot be exported. The export ban creates a legal and market division between Australian and overseas buyers. Local buyers have access to a wide range of Australian bird species while overseas buyers in theory have no legal access to ownership of these birds from Australian sources.

The blanket ban on export has increased the scarcity value of many Australian birds to potential overseas buyers. The supply of Australian birds to these buyers now comes either from illegal smuggling or from captive bred bird stocks of overseas aviculturists. In a few cases some Australian birds bred overseas are even being imported back into Australia. For example, mostly from Great Britain are coming special strains of budgerigars and mutated lines of yellow princess parrots, lutino elegant parrots and pied red rump parrots (AQIS, 1992). Breeding and selection methods cause such imported birds to be very different from the birds that make up the wild populations in Australia (Forshaw, 1978).

### *Market Conditions*

For markets to equate the demand and supply of Australian birds in an efficient and equitable manner, several basic preconditions must apply. For example, property rights must be clearly defined with non-payers able to be excluded from ownership of birds. However, non-excludability is a frequent problem in markets for natural resources (EPAC, 1992). For almost all Australian bird species it is often relatively easy for birds or eggs to be taken from the wild, reared and then passed off as captive bred. Further, it is not possible to determine visually the species of some birds from their egg or juvenile stages.

Given the local and international demand for ownership of Australian birds and the ease with which wild populations could be exploited to satisfy that demand, Australian governments have introduced laws and regulations to reduce the risk of exploitation. However, as discussed later, the advent of DNA finger-printing (Mell and Wetherall, 1992) now makes exclusivity a strong possibility for some bird species.

Currently, there is a wide range overseas in asking prices for Australian birds, with the range reflecting demand and supply factors such as the suitability of the species as a household pet

and the ease or difficulty of breeding the species in captivity. Table 1 contrasts the asking prices for various Australian bird species as advertised in various issues of avicultural magazines in the United States against the local prices in Western Australia.

Whether the differences between the USA and local prices would be sufficient, in the absence of export bans, to attract supplies of Australian birds into the United States depends on supply costs and the nature of the demand for Australian parrots.<sup>2</sup>

Some parrot species not listed in Table 1, are rare locally and internationally, and are likely to attract very high prices overseas. For example, breeding pairs of the red-tailed black cockatoo and the white-tailed black cockatoo retail in Australia for at least \$5000 and \$3000 respectively and when smuggled overseas fetch far greater prices. Breeding pairs of the glossy black cockatoo sell overseas for over \$50,000.

Table 1: Asking prices for breeding pairs of various Australian bird species in the United States and Western Australia

Common name	Price (\$US) in the USA <sup>a</sup>	Price (\$Aus) in Australia <sup>b</sup>
Bluebonnet (yellow-vented)	700	200
Crimson wing	1000,525,650 550,550,550	200
Princess of Wales	400	180
Redcap	700	60
Turquoisines	150,150,150 200,150	75
Galahs	3000,4000 4000	35
Sulphur-crest	1100,1900	350
Ecclectus	2000,1495,2000 2300,2000,2000	3500
Gouldian finches	90,100,125	80-120
Star finches	63,60	18-35

<sup>a</sup> These are the asking prices of aviculturists as reported in the USA avicultural trade magazines "The AFA Watchbird" and the "American Cage-bird Magazine", mainly in late 1986 and 1987.

<sup>b</sup> These are the 1987 recommended retail prices of the Avicultural Society of Western Australia

To legally import an Australian bird into the United States currently requires an export permit from the Australian National Parks and Wildlife Service. This permit costs \$10 Aus. Further costs involve air transport (over \$550 Aus per live 100 kg), with requirements for special container facilities and special care by attendants. On arrival birds need to be transported to quarantine facilities where they are maintained and assessed over 30 days. Advance reservation of quarantine facilities usually is required (\$40 US) and the quarantine bill is often at least \$80 US per bird. Hence, the costs of importing a bird into the United States would, for many common bird species, exceed the cost of purchasing the bird in Australia.

<sup>2</sup> The director of the Pearl Coast Zoological Gardens in Western Australia has indicated that about 5 years ago the largest bird dealer in Australia received an order for one million white cockatoos from a United States importer. The price then in the United States was around \$US4000 for a breeding pair.

Legitimizing the export of captive bred Australian birds would bring Australian exporters into competition against United States aviculturists who face no air transport, quarantine or trade permit fees. To ensure profits from export, Australian aviculturists would need to supply birds that were scarce and highly valued in the United States (eg Galahs), yet which were relatively cheap in Australia. In cases where breeding a species in captivity overseas was difficult and where there were few alternative suppliers of the birds, then Australian aviculturists would maintain a longer period of price advantage. Further, if the genetic variation among the species was greater in Australia than in the importing country or competitive supplying country, then selected breeding of genetically unique or mutated birds would also ensure a price advantage to Australian aviculturists. In the longer term, if Australia was to allow the export of captive bred Australian birds, then some aviculturists would wish to concentrate on the breeding of some rare or endangered bird species whose looks and scarcity might attract particularly high prices on overseas markets.

### *Arguments For and Against Relaxing the Ban on Exports*

The arguments for relaxation are:

- *generation of export revenue and local employment.*

The nature of this argument can depend on whether or not export of only captive bred birds is being considered. If export of wild birds is included then it is argued that export revenue and regional employment is generated by the harvesting and sale of a portion of wild bird populations.

For example, currently in Western Australia, some parrot species are declared pests by the Agriculture Protection Board (APB) and are therefore subject to management programmes devised by the Department of Conservation And Land Management (CALM) and the APB. These programmes may mean that, in some circumstances, farmers are able to shoot the birds to reduce the damage they inflict on crops. As part of the management programmes trappers may also be employed by CALM or the APB to reduce the numbers of birds damaging crops.

Rather than shooting these birds, it is argued that they could be harvested and ultimately exported. The procedures of harvesting and exporting would need to be devised so as to ensure that bird populations and habitats were not endangered, that illegal harvesting and export were minimized and that the regulation of harvesting and export was less costly to taxpayers than the current system. One option might be for some government authority to research and monitor the bird populations and decide on annual harvest numbers. Aviculturists could tender for the right to receive some portion of the bird harvest with the tender revenue going to pay in part for the research, harvest and administration costs of the government authority. Because many bird populations are situated in inland rural regions, the harvesting and monitoring of bird populations could provide regional employment. Further, an industry based on harvesting either a portion of wild bird populations or based on captive breeding would add to the industrial diversity so lacking in many inland rural regions.

If harvesting of wild populations is prohibited, yet export of captive bred birds is allowed, then many households or small firms of aviculturists could be established to supply birds for export. The output and income multiplier effects of establishing such businesses could be sizeable because the materials needed to establish and maintain these businesses would mostly come from local rather than imported sources.

The export revenue from legitimizing the export of captive bred birds could be substantial. For example, in the early 1980s the number of parrots annually imported into the USA was around 400,000 and the annual value of parrot trade in the USA at the same time was estimated at \$360 million. Admittedly, many of these parrots came from South America, but the volume and value of this parrot market, when combined with other market opportunities in

Europe and south-east Asia suggest the potential for a moderately valuable export market for Australia.

*• elimination of smuggling of wild birds.*

Most bird smuggling is undertaken by small, highly organized groups of people with international connections. The illegal harvesting and export of eggs not only robs localities of replacement birds but often the method of poaching destroys scarce breeding sites and can jeopardize the viability of local bird populations. In Australia alone, over \$5 million worth of smuggled wildlife (mostly birds) has been seized since the Wildlife Protection Act was enforced in 1984 (Manly, 1992). It is not known what percentage of the illegal bird trade such seizures represent.

Lifting the export ban on captive bred birds would increase the supply of Australian birds and reduce the profitability and therefore incentive for smuggling. Further, licensing of breeders of rare and endangered species would further reduce risks of smuggling via legitimate channels. There could be annual payments for these licences with licence revenue being used in policing captive breeding. Modern technology such as sealed leg bands, scanner implants and DNA testing for parental pedigree would be necessary to increase the difficulty of unscrupulous sale of wild rare birds through legitimate channels. Also, heavy fines and regulations that facilitate conviction of offenders could be introduced to deter unscrupulous activity. In concert, these changes would reduce smuggling activity and protect wild and endangered populations of Australian birds.

*• reducing pest damage.*

Harvesting and exporting portions of some bird populations would reduce damage to crops caused by these bird populations. As an example of this argument: At the 1984 conference of the Western Australian Fruitgrowers' Association a motion was passed recommending that the Western Australian Government export a minimum of one million parrots before 1 June, 1985. The parrot species of most concern were the red-capped and Port Lincoln that damaged horticultural crops.

*• reduce inhumane treatment of some birds.*

Allowing the harvest of wild birds and encouraging the breeding in captivity of Australian birds would reduce the inhumane treatment suffered by some birds due to smuggling and shooting. Birds classified as native pests (eg 8 species in Western Australia) would be less subject to being shot if they were subject to a management programme that included harvesting and exporting a portion of their populations.

*• protection of endangered bird species.*

By allowing the export of captive bred birds, which could include some endangered species, the survival of these species would be enhanced. Privately-owned stocks of these endangered species would increase, thereby complementing stocks in the wild. Further, revenue from export permits or licences could be used to protect the habitats of endangered species, or to fund the captive breeding and later release into the wild of certain endangered species.

The use of sealed leg bands, scanner implants, DNA testing of pedigree and licensing of breeders of rare and endangered species would make unscrupulous sale of wild rare birds through legitimate channels difficult.

A legal requirement to maintain breeding records for rare or endangered species would enable the breeding performances of aviculturists to be compared and anomalous performances to be highlighted. Apparently anomalous breeding results could signal that some progeny were being poached from the wild and that therefore DNA testing was necessary to authenticate pedigree. Researchers at Curtin University in Western Australia have already completed

genetic profiles on the white-tailed and red-tailed black cockatoos (Mell and Wetherall, 1992) and have almost completed profiles on another nine species known to be subject to poaching. Results of DNA testing have already facilitated the prosecution of several aviculturists in Western Australia.

In January 1991 the Department of Conservation and Land Management in Western Australia approved the capture by a private aviculturist of 40 nareithas (blue bonnets) that are very rare in captivity and are likely to become a target for poaching. All captured birds were DNA fingerprinted and a database of DNA profiles was established. Comparison of the DNA profiles of any future nareithas will confirm whether or not the birds came from this original population or not, hence deterring poaching or the feigning of breeding records. South Australian authorities will also be using the same technique for the Major Mitchell and yellow-tailed black cockatoos that are targets for nest robbers in South Australia (Mell and Wetherall, 1992). The current cost of DNA fingerprinting is about \$100 per bird.

The efficacy of DNA testing in facilitating conviction has already caused a change in the reported rates of successful captive breeding of some species known to be difficult to breed in captivity (Ley, 1992). This suggests that several aviculturists were capturing wild birds or purchasing illegally trapped wild birds and passing them off as bred in captivity. Hence, even with export prohibition, there has been an illegal poaching of birds from the wild with these birds subsequently sold on the domestic market.

The arguments against relaxation of the export ban are:

- *Revenue from sale of harvested wild birds will inadequately cover associated costs.*

Exporting a harvested portion of native birds that are declared pest species is unlikely to return revenue sufficient to cover many of the costs associated with monitoring, administration, trapping and transport. It is well known among aviculturists that the temperament of mature wild birds that are subsequently caged makes them generally unsuited for sale as household pets. Such birds do not easily survive caging. For example, in the early 1980s in the United States' quarantine facilities which house many South American birds trapped in the wild, mortality rates averaged 24 per cent.

Only young and immature birds that better adapt to caged life are more readily saleable as household pets. Hence, only a portion of harvested birds may in fact be suitable for export. The revenue derived from sale of only a portion of harvested birds is likely to be inadequate to cover the administration of this option. The final result may be increased costs to taxpayers.

A further difficulty is that although wild young and immature birds may be better suited for export than mature birds, it is sometimes not possible to distinguish between the young of some parrot species. This inability to distinguish facilitates the illegal export of rare and endangered species. Furthermore, even when birds are normally easily distinguished, unscrupulous traders disguise birds for export. Jenkins (1992) reports the case where a crate of homing pigeons being transported for legitimate offshore races contained some parrots disguised with docked tails and dyed feathers. Such unscrupulous export would be difficult to avoid.

Another reason for prohibiting the harvest and export of native birds is that some countries, notably the United States, are considering or introducing legislation that requires ownership proof that birds held as domestic pets were captive bred and not taken from the wild.

A final consideration is that a blanket ban on exports is administratively simple to enforce. By contrast, even if only captive bred mature birds are exported, the degree of checking and identification necessary for proper supervision is great.



*Harvesting of wild birds may not reduce damage they inflict on crops.*

In order to reduce the damage inflicted by pest species, the actual geographical location of offending populations would first need to be identified. Arbitrarily harvesting a portion of a bird population, without taking into account its location and likely damage effect, is unlikely to reduce damage caused by the bird species. Further, to lessen the damage to some crops may require harvesting a large proportion of offending populations. Such an action would be unacceptable to conservation and wildlife groups as it may endanger these local bird populations. Further, there are other ways of reducing the damage caused by birds without killing or harvesting the birds. For example, some on-farm options are placing crops away from trees and power lines; planting crops that mature when other natural food sources are available and planting cheaply, low value alternative food sources near high value crops.

*Smuggling of rare or endangered species may increase if export bans are lifted.*

Although the relaxing of export bans may eventually depress market prices, nonetheless smuggling may actually increase. Smugglers may attempt to by-pass the costs associated with captive breeding by masquerading wild birds as captive bred. Smugglers could through bribery or forgery use legal avenues of exporting wild birds rather than risk covert export. The advantage to smugglers of forgery and bribery is that the survival rate among transported birds would be much higher.

Export of fledglings, whether captive bred or from the wild, would expose some rare and endangered species to exploitation because of the visual inability to distinguish among some species. The young from some rare and endangered species could be disguised in batches of young birds of other species.

Even if export of only captive bred mature birds is allowed, some rare and endangered species may still be subject to exploitation.

The experience in the 1980s in the United States was, after lifting the prohibition on sale or export of captive bred birds, wild specimens of rare and endangered species were still being smuggled. In spite of close supervision by the US Fish and Wildlife Service, a 3 year investigation revealed that forgery of government permits and leg bands normally used on captive bred birds enabled hundreds of peregrine and gyrfalcons to be illegally taken from the wild. Prosecution of offenders in courts in the United States has proved costly and not always effective as there are difficulties in identifying and proving intended malpractice. The incentive to pass off wild falcons as captive bred is particularly strong in the United States because prices paid by European and Arabian falconers for gyrfalcons are known to be as high as \$US50,000.

*Local extinction of some species may occur if the capture and export of wild species is not regulated, monitored and policed.*

Accompanying the permission to harvest wild populations would need to be the regulation, monitoring and policing of harvest activity, otherwise local extinction of species is possible. The costs of these accompanying activities would need to be re-couped from revenue derived from sales of the harvested birds and may greatly reduce associated profits.

In northern Australia in the 1960s, licensed trapping of Gouldian finches led to some local extinctions of these finches. In Western Australia, where licence suspension was delayed, populations of Gouldian finches in many localities have never recovered and several localized populations remain endangered. The case history of the Gouldian finches is an example of regulation without sufficient monitoring and policing.

*Wider issues*

The Australian export ban on native birds, particularly pest species has been the subject of some debate. In 1976, after a two year inquiry, the Standing Committee on Environment and Conservation delivered 16 recommendations, including one for the relaxation of exports of native birds provided they were common or pest species or were bred in captivity. The Council of Nature Conservation Ministers (CONCOM) discussed these recommendations in July 1977 and August 1978. Finally, the Fraxor Government accepted all of the recommendations, except two, one being the lifting of the ban on exports of native birds.

In 1983, 1984 and 1985 CONCOM needed to further discuss the issue of export prohibition. In 1991 the Australian and New Zealand Environment and Conservation Council (ANZECC) also addressed this issue and called for a review of the Wildlife Protection (Regulation of Exports and Imports) Act 1982. This review has not led to any change in export prohibition, although import of birds into Australia has been slightly relaxed.

The politics of the issue are that the group pushing for relaxation of the ban includes the Associated Bird Keepers and Traders, the RSPCA (NSW), some private zoos and larger aviculturists and some farmer groups. The group against relaxation of the ban includes the International Council for Bird Preservation, Trade Records Analysis of Fauna and Flora in Commerce (TRAFFIC) and the Australian National Parks and Wildlife Service.

Whatever policy directions the Federal Government adopts on this issue they will be bound by Australia being a signatory to the Convention on the International Trade in Wild Fauna and Flora (CITES).<sup>3</sup> Resolution 1.6 of CITES states that: "Mortality in trade and captivity is high. This Conference urges exporting countries to endeavour to restrict gradually the collection of wild animals for the pet trade and that all contracting Parties encourage the breeding of animals for this purpose, with the objective of eventually limiting the keeping of pets to those species which can be bred in captivity."

For Australia to allow the harvesting and export of wild birds would be in contravention of the spirit of CITES. If the export ban on native birds was lifted in Australia then, to fulfill its CITES obligations, Australia would be morally bound to allow only the export of captive bred birds. Besides, a main potential market for Australian birds, the United States, will be ensuring that birds sold locally are captive bred and not harvested from the wild.

Although CITES is a fine example of international legal agreement, its enforcement lacks consistency and credibility. Trexler and Kosloff (1989) comment about CITES that the "global implementation of its provisions is inefficient, fragmented, often self-defeating, and largely ineffective." (p331). In assessing export controls like those in CITES the National Academy of Sciences (1987) found that exports from the United States were being unnecessarily impeded and that regulation compliance was discouraged by the complexity of controls. Diver (1980) also makes the general observation about export regulation that it is easier to find obvious but often relatively harmless regulatory irregularities than it is to identify and stop true problems. For the trade in birds, the most damaging shipments are almost certainly those avoiding any documentation, rather than those with minor documentary irregularities. Hence, although Australia is a signatory to CITES, and may well be a model of regulatory propriety, it is relatively easy for smugglers to illegally air-lift or post birds or eggs from Australia to other countries where false documentation is easily arranged; the birds then being re-exported *legitimately*.

Another wider issue is the ethics of whether Australia should allow the export of bird species which, if accidentally or deliberately released from captivity in the importing country, may cause environmental damage. How serious are these damage risks depends on the nature of the bird species, the legal requirements surrounding the housing and care of the birds and the nature of the locality in which the birds are released.

<sup>3</sup> CITES stands for Convention on the International Trade in Endangered Species.

Although there are several easily cited examples of damage caused by introduced birds (eg starlings in Australia), such damage has been mainly due to deliberate, planned and often repetitious releases of these birds; especially by groups such as the Acclimatization Society last century. Such planned releases of birds are now unlikely to occur in most modern importing countries. Further, legal restrictions can apply to the housing and care of Australian parrots in importing countries such that the risk of a wild population being established from accidental releases of caged birds could be lessened. Lastly, many importing countries make their own assessments as to the likelihood and size of damage risks, and accordingly make recommendations about the legality of import of particular bird species.

### *Conclusions*

Given the pros and cons of lifting the export ban, my current judgement is that on balance a conditional lifting of the ban is defensible. A feasible option would be an administered system to allow export sales of captive bred birds. For example, appendix I in Loy (1992) and concluding comments of Halstead (1992) offer a licensing system as a possible means of relaxing the export ban. A related option would be for regulatory authorities to establish core breeding flocks for species allowed to be exported. The breeding pairs of those flocks would constitute the initial breeding stock for export sales and all birds in the flocks would be DNA fingerprinted and fitted with scanner implants. These breeding pairs could then be sold by auction or tender. Conditions of the tender or sale of these birds would be the maintenance of breeding records and unrestricted access to those records, aviaries and birds by authorities. At cost to the exporter, all progeny or some undisclosed proportion would be DNA tested immediately prior to export, and export taxes or export permit fees would apply to these birds. The agency overseeing the export of the birds could widely advertise to aviculturists a verification service, whereby the DNA pedigree of birds could be assessed. This service would allow potential buyers of birds to ascertain whether or not the claimed pedigree of birds on offer was legitimate or not.

Such a system would clearly establish transferable property rights and ensure that export income was not based on the exploitation of wild populations. All policing and administrative costs would be recouped through auction or tender receipts and export fees. Aviculturists found to be in breach of the regulations would receive penalties ranging from a fine to gaol and confiscation of breeding stock, progeny and equipment. The rotation of inspectorial, laboratory and administrative staff would reduce the risk of corruption and fraud. To limit the role of speculators, a sale or tender condition for initial breeding pairs might need to be that those bidding or tendering have proven avicultural experience.

Part of the revenue derived through regulatory compliance could fund research and monitoring of endangered or rare Australian birds to further ensure their wild populations are not subject to exploitation. Regulations and legal penalties covering illegal capture of birds, bribery, fraud or smuggling of Australian birds would need to be designed to facilitate prosecution and act as strong deterrents.

In Western Australia the penalties for unlawfully taking rare flora and fauna have been increased in 1992. The maximum individual fine has been raised from \$10000 to \$60000 plus 18 months' imprisonment while the corporate fine has been raised to \$100000. In three Australian States, enforcement officers have powers to enter and search residential premises without a warrant if they suspect an offence (Halstead, 1992)

The continuation of native bird exports would need to be subject to formal periodic review to firstly ensure the policy and its administration is cost-effective and that no native bird species is being deleteriously affected and secondly, to ascertain which other species, if any, could be added to the list of species whose regulated export is permitted. The regulation and policing of the bird exports would need to be designed to be effective in detecting smuggling, yet not so laborious as to deter exporters' compliance with necessary paperwork and approvals.

Given the likelihood of many overseas buyers of Australian birds and limited competing overseas suppliers of those birds, there may be some advantage in Australian exporters acting co-operatively or through regulation as a single seller. Of further advantage to Australian exporters may be vertical integration through either establishment of an importing firm or contractual arrangements with such firms in some countries. Contractual arrangements could include franchise agreements with importing aviculturists who would pay for the privilege of being the sole recipient of the Australian breeding stock in a certain geographical area of the importing country. The prices for receipt of breeding stock would be negotiated as part of the franchise agreement. Whether or not such options are preferable or practicable to atomistic competition among Australian exporters and overseas buyers is open to discussion and further investigation.

### References

- AQIS (1992) Birds of a Feather Article in AQIS Bulletin: A summary of news and information from the Australian Quarantine and Inspection Service, Vol 5, No.9, p2.
- Anon (1992) Notes on bird imports. In *Aviary Bird Journal* Vol 6, No.11, p428.
- Driver, C.S. (1980) A theory of regulatory enforcement. *Public Policy* Vol 28, No.3, p257-299.
- Economic Planning Advisory Council (EPAC) (1992) *Managing Australia's natural resources*, EPAC Council Paper No. 49, AGPS, Canberra.
- Forshaw, J.M. (1978) *Parrots of the World* 2nd Revised Edition, Lansdowne Editions, Melbourne, 616pp.
- Jenkins, C.F.H. (1992) Call to end ban on the export of native birds. Article in the "The West Australian" newspaper, Monday, July 13.
- Halstead, B. (1992) Trends and issues in crime and criminal justice No. 41: Traffic in flora and fauna, Australian Institute of Criminology, November, 1992, 8pp.
- Ley, J.F. (1992) Australia's protection and conservation of wildlife: Report on the review of the Wildlife Protection (Regulation of Exports and Imports) Act 1982 and regulations, April 1992, AGPS, Canberra, 252pp.
- Manly, C. (1992) DNA test may shoot down smugglers. Article in the "Sunday Times" newspaper, Sunday, November 29.
- Mell, D. and Wetherall, J. (1992) To catch a thief. *Landscape* 7:28-32.
- National Academy of Sciences (1987) *Balancing the national interest: US national security export controls and global economic competition*. National Academy Press, Washington, D.C., 321pp.
- Trexler, M.C. and Kosloff, L.H. (1989) Regulatory enforcement and implementation theory as predictors of the performance of wildlife trade controls: A case study. *Transactions of the 54th North American Wildlife and Natural Resources Conference* (Ed. R.E. McCabe), March 17-22, 1989, Washington D.C., 324-332.